

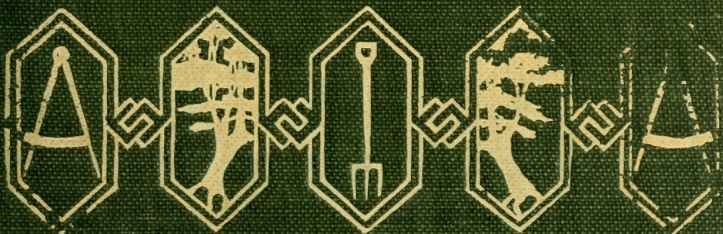


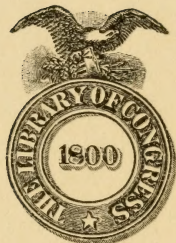
MAKING A GARDEN OF SMALL FRUITS

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F.F. ROCKWELL





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**MAKING A GARDEN
OF SMALL FRUITS**

THE
HOUSE & GARDEN
MAKING

BOOKS

IT is the intention of the publishers to make this series of little volumes, of which *Making a Garden of Small Fruits* is one, a complete library of authoritative and well illustrated handbooks dealing with the activities of the home-maker and amateur gardener. Text, pictures and diagrams will, in each respective book, aim to make perfectly clear the possibility of having, and the means of having, some of the more important features of a modern country or suburban home. Among the titles already issued are the following: *Making a Rose Garden; Making a Lawn; Making a Tennis Court; Making a Water Garden; Making Paths and Driveways; Making a Poultry House; Making a Garden with Hotbed and Coldframe; Making Built-in Furniture; Making a Rock Garden; Making a Garden to Bloom This Year; Making a Garden of Perennials; Making the Grounds Attractive with Shrubbery; Making a Bulb Garden; Making a Garage; Making and Furnishing Outdoor Rooms and Porches*; with others to be announced later.



Blackberries and other cane fruits when blooming in the spring are as beautiful as any of the hardy decorative shrubs

MAKING A GARDEN OF SMALL FRUITS

F. F. ROCKWELL

Author of "Home Vegetable Gardening,"
"Gardening Indoors and Under
Glass," Etc.



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Making a Garden of Small Fruits

PLANNING THE FRUIT GARDEN

EVERYBODY realizes the advantage of delicious fresh fruit, but few understand that they may grow it even in a small garden. This book is to indicate that there may be a garden that produces fruit which is as beautiful as any flower garden and which has a changing attraction up to the very edge of winter, when it presents you with its bountiful reward. Why not plant a garden of small fruits?

The question of extent is not a serious one. Go over your ground carefully and make a little sketch indicating the shape and size of the space you have available for setting out fruit. As already suggested, corners, walls, house-sides and so forth may be taken advantage of for vines or trained fruits where space is limited. Indicate on your little sketch—

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which by no means must be a carefully drawn plan—the number of each of the various fruits—raspberries, blackberries, dewberries, currants, gooseberries, strawberries, grapes and dwarf fruits, if any, you will want. The proportions will depend largely, of course, upon the family taste for these things. Do not merely put them down by “the dozen” but count carefully how many of each you will require when they are set up at proper distances. The way *not* to plant a fruit garden is to order a dozen or so of this or the other thing all at one time or when the fancy takes you and to plant it wherever you “can find room for it” at the time. It will not take any longer to plan and be systematic about it in the first place, and the results will be a hundred per cent. better.

After you have figured out about how many of each of the things you are going to want, you should go carefully over the varieties and decide which ones you want, keeping in mind all the time, not only good eating quality but also the season of ripening; as in each case, it is highly important that you should have the fruit over as long

a season as possible. With strawberries, you should pick out an extra early, a couple of mid-season sorts which ripen one after the other, and an extra late variety, and in addition to these a few of the newer fall fruiting sorts, which will give you a long-continued supply. The same care should be exercised in making a selection of the cane fruits, the tree fruits and the grapes. With currants and gooseberries, of course, the number of varieties is much more limited, but even here, care should be used in ordering, as the new varieties are great improvements over most of the old sorts.

Of course, in deciding where the various things go, you should exercise your very best judgment in so placing them that they will interfere not at all, or as little as possible, with the working and the cultivation of your vegetable garden, or with the general plan of the flower garden and the grounds. As already suggested, they may be planted so as to give a generally decorative effect to the grounds.

One of the good points about growing fruits is that they will do well in any ordinarily good soil, even in a soil in which it

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would be very difficult to grow good vegetables. One thing they all *do* demand, however, and that is *thorough drainage*. Wet feet and good fruit you will not find on the same bush, vine or tree. Where the ground available does vary a little in character—which is, however, not likely to be the case in the ordinary small home garden—some preference is to be made as to where the different things go, that is, in light soil or in soil that is a bit more heavy or clayey. These preferences are mentioned in the chapter on planting; and if you are so fortunate as to have at your disposal soil that varies as to its make-up, you should give these preferences consideration when making out your plan. They are, however, not nearly so important in producing results as proper fertilization and culture.

Having made up your mind what you want in the way of small fruits, and where to plant them, the next step is to get the best possible start by procuring the best plants you can get. It is important to have plants of good size. It is much more important to have them absolutely healthy and also true to name.

Furthermore, you want to get them at as reasonable a price as possible. From my own experience, and that of others I know personally, I feel confident in saying that you will get much better satisfaction by dealing direct with a reliable, well-established nursery house, doing a mail-order business, than by depending upon some itinerant agent with a portfolio full of elaborate and gaily colored lithographs of the most wonderful fruits you ever heard about.

It usually pays best, especially where one is setting out a limited number of plants, to use plants of the first size and quality. The difference in price on a dozen or two will not amount to a great deal, and results will be quicker and more certain.

Most of the small fruits are very hardy and do well over a wide range of climate as well as of soil, and the standard varieties which I mention have given quite universal satisfaction. If, however, you have tried any sorts which did not seem to do well, when properly cared for, or if you want to be absolutely certain of your way before you place your order, write

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to your state experiment station or to your nurseryman and ask him if the varieties you have selected are all right for your locality, or if they have any others they would suggest. This will involve very little trouble on your part, and give you the satisfaction of knowing that you are on the right track before you go ahead.

While making out your order keep in mind what has already been said about the necessity of selecting varieties which will give a succession or continuity of crop over the longest possible season. The following varieties of the various small fruits include most of the standard sorts which have become universal favorites and a number of the more up-to-date introductions which seem to be making good.

Raspberries. The red sorts are the most popular, but you should include at least one of the black sorts (black-caps) in your list. Of the former, the King (extra early), Cuthbert, Reliance, Cardinal (quite new), and Columbian are all excellent. St. Regis and Ranere are two similar splendid varieties of recent introduction especially valuable for the home garden as they are "ever-bearing," continuing to fruit, though not so heavily of course,

throughout the summer after the regular spring crop. Palmer (very early), Gregg, Kansas, Cumberland, are good dark sorts, Golden Queen is the standard yellow.

Blackberries. Good standard varieties are Early King, Early Harvest, Wilson Jr., Kittatinny, Snyder and Erie. Mercerau is a splendid new early, and Rathburn an extra fine main crop sort, but not so hardy as most of the others, doing best south of New York.

Currants. The old favorite Red Dutch is one of the hardiest, and more immune to the borer than some of the newer sorts, but the latter, if looked after, will give much finer fruit. London Market, Fay's Prolific, and Prince Albert are all good sorts, but the newer Perfection is probably the best home-garden currant so far introduced. White Grape is the best white sort. Naples and Lee's Prolific are good blacks.

Gooseberries. The native gooseberries are the hardiest. Of these Downing and Houghton's Seedling are the best. Industry is a fine English variety which does very well here. Champion and Golden Prolific are two other good ones. The Pearl is a fine pale green dessert sort.

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Strawberries. Early Ozark, a splendid new sort, Alpha, and Climax are extra early: Glen Mary and Sample, second early: Nic. Ohmer, Wm. Belt, Cardinal, Brandywine, Marshall, medium: New York, Gandy, Leste Lovett, Fendall (new), and Commonwealth, late.

To make the job easy for you, here is a suggested order, ready-made:

HOME GARDEN ORDER FOR SMALL FRUITS.

(An Abundance of Fruit for Years to Come for \$10.)

FRUIT	PLANT	VARIETY	NUM- BER	COST
Strawberry..	{ 1" x 1" or 1" x 2"	Climax, early	100	\$1.50
		Marshall, midseason	100	1.00
		Lester Lovett, late	100	1.00
Raspberry...	{ 3x6	The King, red, early	6	.25
		Cardinal, red, late	6	.40
		Cuthbert, crimson	6	.40
		Mumber, black	6	.25
Blackberry ..	{ 5x7	Mercerau, early	6	.40
		Erie, main	6	.25
Dewberry ...	{ 5x7	Premo, early	6	.25
		Lucretia	3	
Currants	{ 4-5 apart	Perfection, red	8	.80
		Lee's Prolific, black	2	.20
		White Grape, white	2	.20
Gooseberry..	{ 5-6 apart	Downing, pale green	1	.15
		Red Jacket, red	1	.15
		Industry, red	2	.40
Grapes	{ 6 or more apart	Green Mountain, Early white	1	.50
		Moore's Early, black	1	.25
		Campbell's Early (Concord)	1	.25
		Delaware red	1	.25
		Catawba, dusky red	1	.25
		Pocklington, golden	1	.25
				<hr/> \$9.35

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Grapes. Early black sorts, Campbell's Early, Moore's Early, and Worden. Concord is a fine old favorite. Wilder and Eaton are also good. Red sorts (early), Brighton (medium); Catawba (Salem) and Delaware and Ionia, both late, are all popular. Lindley is an extra large and sweet red which deserves to be much more widely known. The best of the early whites are Moore's Diamond and Green Mountain (Winchell). Niagara and Empire State are good late whites.

PLANTING

THE second half of the vitally important point of getting a good start is to do the planting properly.

You can as a general thing depend upon your nurseryman to pack your plants so that they will reach you in good condition for setting out. The important thing for you to do is to see to it that your ground is in condition and awaiting their arrival before you find them actually on your hands. You should have things in such shape that you can set them out immediately they reach you.

It is, however, sometimes impossible to carry out such a program. In that case you should see that your plants upon arrival are protected from wind and sun, by putting them in a cool, dark place such as a shed or cellar. If they are put up in a box or tight bundle, open them so that the air can circulate freely about the leaves and stalks or stems, preventing any chance of molding or rot, but at the same time

see to it that the roots are kept covered with moss or bagging and kept moist. Trees or shrubs, if they must be kept on hand for some time before being set out, should be "heeled in"—planted in soil temporarily simply by digging a narrow trench as long as is required, and standing them up in it, packed close together, at an angle of forty-five degrees or so, and filling in around the roots with earth. By this method they may be kept in good condition for a long time. They should, of course, be kept in as nearly a dormant state as possible and without making new roots.

Where the plants, shrubs or dwarf trees are to be set directly into the vegetable garden, little or no preparation of the ground, other than it has already received, should be necessary. Where, however, they are to be set out along a fence near a house wall or in sod, the soil should be especially prepared for them in advance.

The first essential is proper drainage. If your ground has not naturally a sub-soil which will permit any surplus moisture either to drain off or percolate down through it, you must take some method of

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correcting this fault before you plant. If the ground is simply low and wet, ditching, or draining—either with stone or drain-tile, though the latter is much better—may be necessary. This work can be done at very little cost, for a small area, and will improve the ground not only for fruits but for any other purposes to which you may have occasion to put it. Where a hard impervious sub-soil is found, even though the surface may not stay wet and soggy after heavy rains, it should be broken up before planting. This can be done either with the pick-ax or with a small charge of low-grade agricultural dynamite. Breaking up the hard sub-soil in this way not only lets any surplus water through, but permits the tree-roots to go down readily into the soil, instead of spreading out near the surface, and increases their range and capacity for resisting the drought.

The soil in the “hole” for planting should be thoroughly dug over and pulverized in a circle of two or three feet in diameter and at least a foot in depth. The soil, unless already in very excellent condition, should be enriched to some ex-



Proper care in pruning is necessary to grow such blackberries as these, but it does not involve much work

tent before any planting is done. If manure is to be employed for this purpose, use only that which is very old and well decomposed. Manure that is not thoroughly rotted should by no means be utilized for this purpose. Ground bone, which should be part at least what is known as "inch bone" (simply pure bone crushed or cracked very coarse so that many of the pieces are from a quarter of an inch to an inch long), is excellent to use for this purpose, as the plant-food in it will become gradually available for a number of years. A little potash, either in the form of muriate or sulphate of potash, or in wood-ashes, should also be added. A few good handfuls of sulphate or muriate, or several shovelfuls of wood-ashes, to each hole, will be sufficient. It is well to use the potash even when the manure is employed instead of the bone. But whether manure or a chemical is used, it should be thoroughly forked in and mixed through the dirt in the hole, which should not be filled within three or four inches of the top until after this has been done. Then fill in level with the surrounding grass or soil. The object in keeping the richer soil be-

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low the surface is to induce the roots to strike downward, rather than to spread around near the surface.

Fruit bushes or trees of various sorts are usually sent out from the nursery just as they are dug from the fields. If you have everything ready to plant as soon as your stock arrives (as you should plan to have), it is well to state on your order that you wish the nurseryman to *prune all stock back ready for planting*. This will not only save you the trouble of doing it, and the possibility of doing it wrongly in case you lack experience, but make your transportation charges less. The reason it is not done as a usual thing is that nurserymen naturally want their stock, when received by the customer, to come up to the specifications for size, height, etc., given in the catalog, and it looks like bigger value for the money than it would if pruned back. Do not be loath to make this seeming sacrifice of stalk and branch. Plants so treated will, at the end of the first season's growth, be far ahead of what they would have been without this pruning back.

In digging up, packing, and transporting the plants, it will have been inevitable,

too, that some of the roots should have become broken and bruised. When you unpack your stock you should look over the roots carefully, and cut off, with a sharp knife or pruning shears, back to good sound wood, any which may have become injured, or which are too long and scraggly to go readily into the hole when planting. Under the cultural directions given for the several different types of small fruits, more definite directions for this pruning back are given.

When setting out small fruits, as with transplanting of all kinds in fact, the point of great importance is to get them in firmly enough so that the earth will be packed compactly about the roots and hold them without motion in one position until a growth of new feeding rootlets has been made. They should be set down into the soil as deep or a little deeper than they had been growing in the nursery, as shown by the earth-mark on the stem, and the roots should be spread out carefully in as natural a position as possible, and not cramped into a small space or bent back up toward the surface at their extremities. Work the soil in around the roots with the

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fingers, and press it down with the hands as tightly as possible until the bush or tree is held firmly in an upright position. Then it may be trod upon with the balls of the feet to make it still more firm.

If it is very dry when setting out, water may be applied in the bottom of the hole. It should never be poured on top, after the planting is done, as in that case it evaporates quickly, and leaves the surface a hard baked crust, doing the plant little or no good, and possibly even injury.

Be sure, no matter what you are setting out or how few of them there may be, to get all your rows in absolutely straight lines, and interspaces equal. This will not only greatly improve the looks of your fruit garden, but assist materially in taking care of it.

Most of the small fruits do best, especially in latitudes north of Philadelphia, with spring planting. Strawberries are often set out in late July or August, but this is really a belated form of spring planting, as they are set only with the idea of having them become firmly established, with a good crown formed, before winter sets in.

As this planting is best done very early in the spring, however, while the stock is still dormant, or has just begun to make new growth, and as there always are a multitude of other things to attend to at this time, it is well to prepare the soil and have everything ready for them during the preceding fall, so that they can be set out without any delay, when spring arrives.

Tree fruits may be set out in either the fall or the spring, but they are, especially the dwarfed or grafted sorts, generally considered safer with spring planting. The chief danger with spring planting is injury from drought. This may be guarded against by proper planting, cultivation of the surface soil, mulching with strawy manure, leaves, or other light litter such as grass clippings during the hottest weather, and if necessary an occasional thorough soaking with the hose in the late afternoon or evening. Irrigation of this sort is of course much more effective when used with a mulch to prevent evaporation during the day.

CULTURE—THE CANE FRUITS

THE soft-berried or cane fruits are all treated in much the same way. Any situation where they get the full sun, and the soil is well drained, will answer. It may be at the side of the vegetable garden, or a narrow strip along a fence. If there is not room otherwise, they may be trained against the fence. If there is any choice as to soil, use that in which there is considerable clay.

The spot selected should be well enriched with old manure, and dug down to a depth of at least eight inches. The space needed can readily be decided, as the plants will require about four feet in the row and six between rows—some sorts taking a little more and some a little less space than this. Set them in the soil an inch or so deeper than they have been grown in the nursery, working the earth in carefully and firmly about the roots. At the time of planting, cut the canes back to six or eight inches. These plants will not bear fruits until the



With one of the new "ever-bearing" varieties, such as the St. Regis, raspberries may be enjoyed for a long season

following year; but if one wishes fruit the same year, it can be had by ordering extra plants, and setting these between the plants set out for the permanent bed. These extras are cut back only a little, leaving them about two feet high. They will bear fruit the same year as planted, but are not likely to do much the following year, so it is best to pull them up after the season is over. As the plants cost but a few cents apiece, this is not such an expensive luxury as might at first appear.

After setting the plants out, do not neglect the bed, as success will depend very largely upon the thoroughness with which the surface soil is kept stirred to maintain the "dust mulch." At first it will be well to work the soil several inches deep, to loosen it thoroughly after the packing it gets while the plants are being set. After root growth starts, however, it should be loosened only on the surface, not more than two or three inches deep. In very hot seasons, a summer mulch of hay or spent manure will help retain the soil moisture, but weeds must be kept out.

There are three methods of giving the

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plants support. The one most commonly used is to have a stout stake for each plant, to which the canes are tied up with some soft material—raffia or strips of old sheeting. The second way is to string a stout wire the length of the row and tie the plants to this. An improvement on this method is to string two wires, several inches apart, one on either side of the row.

Another important matter is the pruning of the canes. The cane berries bear fruit on the growth of the season previous, and therefore it is necessary to cut out all old canes that have borne one crop. This should preferably be done just after the fruiting season, but is sometimes left until fall or spring. In the home garden, however, there is no excuse for thus putting it off. The new growth each year must also be cut out, as the plants send up more shoots than are desirable for best results. Cut out to the ground all but four or five of the new canes. The canes left, if they are to be self-supporting, as sometimes grown, should be cut back when three or four feet high. Where support is given, however, they are usually not cut back until the following spring. In the case of

those varieties which have fruit on side shoots, as most of the "blackcaps" do, also cut back these side shoots one-third or one-half in the spring.

It will thus be seen that in pruning plants of this class there are three things to keep in mind: (1) Cut out all canes that have fruited. (2) Cut out all but four or five of the new shoots. (3) Cut back both new canes and side shoots one-third to one-half.

Winter protection is usually given in sections where the winters are severe—New York or north of it. The canes are laid down by bending over as flat as possible, and covering the tips with earth. This is not done until just before severe freezing weather. The canes are sometimes covered with rough litter; but bending them down is in itself a great protection, as they will not be so much exposed to wind and sun, and will be covered with snow when there is any. Another method is to cover the entire canes with soil. Whatever mulch is used, it should not be put on until the ground begins to freeze, and should be taken off before any growth starts in the spring.

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Raspberries—Raspberries like best a clayey soil. It should be cool and moist, but never wet. The black and red types of raspberry are distinct in flavor, and both should be grown. The red varieties should be planted about three feet apart in the rows, with the rows five feet apart; but for the blackcaps the rows should be six feet apart, and in rich soil seven will be more comfortable. The blackcaps (and a few of the reds, like Cuthbert) throw out fruiting side branches, which should be cut back in spring one-half to two-thirds their length.

Of raspberry enemies, the most troublesome is the "orange rust." It attacks the blackberry also. No effective remedy has yet been found. Pull up and burn at once all affected plants. On newly set beds, our old friend the cut-worm may prove destructive. Search for him in the dirt at the foot of the cut-off canes, and serve him wheat bran mash with Paris Green (teaspoonful in a quart of water with the bran mixed in). In some sections the raspberry borer—the larva of a small, flattish, red-necked beetle—does considerable damage. He bores in the canes in summer, causing

“galls” on the briars, and finally killing them. Cut and burn.

Blackberries—If there is any variation in the soil picked out for the berry patch, give the driest place to the blackberries, as lack of moisture effects raspberries more seriously. Blackberries do not need the soil quite so thoroughly enriched as do raspberries, and a surplus of plant-food, especially of nitrogen, may keep the vines from ripening up thoroughly in the fall, which is essential for good crops. If growing too rankly, they should be pinched back in late August. When tying the vines up to support in the spring, cut back the main canes to four or five feet, and the laterals to not more than a foot and a half.

The enemies of the blackberry are not often serious, if the plants are well cared for. The most dangerous is the rust or blight, for which there is no cure but carefully pulling and burning the plants as fast as infested. Another is the blackberry-bush borer, whose presence is indicated by wilting, and a change in color in the canes which should at once be cut and burned. Another pest which has appeared

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but recently is the bramble flea-louse, which resembles the green aphid, except that it is a brisk jumper like the flea-beetle of potato vines and turnips. The leaves of infested plants twist and curl up in summer, affording protection to the enemy, and do not drop off in the fall. Early on cold mornings, or in wet weather, when the insects are sluggish, cut out all shoots upon which any are to be found, collect them in a tight bottomed box, and burn.

The dewberry is really a blackberry, that can be trained and requires the same culture. As the vines are naturally slender and trailing, in garden culture it must be supported. The canes may be staked or wired up, as with blackberries, or a wooden barrel-hoop, held by two stakes, makes a good support. The dewberry ripens ten days or more before the blackberry, and for that reason at least a few plants should be included in the berry patch.

CULTURE—THE BUSH FRUITS

THE bush fruits, the currant and the gooseberry, are very similar in their requirements of soil and culture. A deep rich moist soil—approaching a clayey loam—is the best. There is no danger of over-feeding them, although where manure is used it should be well rotted up.

The long-suffering currant will stand probably more abuse than any plant in the home garden—and is frequently the most neglected. Although the currant is so hardy, no fruit will respond more quickly to good care. Plenty of room, plenty of air, plenty of moisture—secured when necessary by a mulch of hay or other material in hot, dry weather—are all essential to getting the best from the currant bush.

Four or five feet each way is not too much space to give currants. The soil should be manured liberally, and well worked before planting. Do not think that you can dig out a little hole just big

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enough for the roots, leaving the rest of the ground unturned and unenriched, and get good results. Keep the soil between the bushes well cultivated. As the hot, dry season comes on, mulch the soil if you would be certain of a full-sized, full-flavored crop. Two bushes well cared for will yield more than a dozen half-neglected ones. The currant suffers from excessive heat and dryness, but with proper attention a full crop should be secured every year.

As with the other small fruits, a most important factor in growing currants is proper pruning. The most convenient and satisfactory way is to keep them in bush form. Set the plants singly, at the distance previously mentioned, and so cut all new growth, which is produced generously by the currant, as to retain a uniform bush shape, preferably somewhat open in the center. Another thing to keep in mind when pruning is that the fruit is borne on wood two or more years old, so all wood should be removed either when very small, or not until four or five years old. All that is allowed to grow one or two years and then removed, is just



With the new mildew resistant varieties it is now possible for the home gardener to grow gooseberries like these



Currants will withstand neglect, but good culture must be given to get the best results

that much of the plant's energy wasted. Therefore, in pruning currants, take out (1) superfluous young growth; (2) old, hard wood (as new wood will produce better fruit); (3) all weak, broken, dead or diseased shoots; (4) during late summer, keep the tips of the new growth pinched off, which will cause them to ripen up better, resulting in more fruit when they bear; (5) maintain a good bush form, go over the whole plant lightly in the fall, trimming the desired shape—but do not cut back more than one-third.

Under some special circumstances, as where space is limited and they must be grown close against a wall, it may be advisable to train to one or two a few main stems. This, however, increases the dangers of loss from the currant borer.

The black currant is entirely different from the red and white currants. It is used almost exclusively for culinary purposes, or preserving. The plants are much larger, and should be put five or six feet apart. Some of the fruit is borne on one-year old wood, so the new shoots should not be cut back. The old wood, also, bears as good fruit as does the new growth,

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so there is no need to cut it out until the plant is getting crowded. As the wood is much heavier and stronger than that of the other currants, it is advisable gradually to develop the black currants into the tree form.

The common green currant worm is the worst pest encountered in growing currants. His appearance will be indicated by holes eaten in the lower leaves early in spring—generally before the plants bloom. Spray at once with Paris Green in water (1 lb. to 50 gals.) or with arsenate of lead (2 lbs. to 50 gals. water). If a second lot appear after the fruit sets, dust with white hellebore. By the time the fruit ripens, this will probably have been washed off by the rains; if not, wipe from the fruit. For the currant borer, cut out and burn every infested shoot. Examine the bushes carefully late in the fall; those in which the borers are at work will usually have a wilted look, and be of a brownish color, readily distinguished.

The Gooseberry—The gooseberry requires practically the same treatment as the currant received. It is even more important that the coolest, airiest location

available be given to it, and the most moist soil. Even a partially shaded location will serve, but in this case extra care must be used in guarding against that often fatal enemy of the gooseberry—the mildew. Summer mulching, to retain moisture, is, of course, of special benefit.

In pruning the gooseberry, as with the black currant, it is best to cut out to a very few or even to a single stem. Keep the head open to allow the air to circulate freely and reach every twig and branch. The extent of pruning, besides being a precaution against the mildew, will also determine largely the size of the fruit; if berries of the largest size are wanted, prune out severely. All branches drooping to the ground, and all which cross or grow together, should be removed.

The enemies of the gooseberry are the currant worm, borer and mildew. The first two are treated as already described. The gooseberry mildew is a dirty, whitish fungous growth covering both fruit and leaves. It is especially destructive of the foreign varieties, the cultivation of which, until the advent of the potassium sulphide spray, had in many localities been prac-

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tically abandoned. For this spray, use 1 oz. of potassium sulphide (liver of sulphur) to 2 gals. of water, and mix just before using. Spray three or four times a month, from the opening of the blossoms until the fruit is ripe.

CULTURE—STRAWBERRIES

ARE you one of the thousands who, while possessing at home a garden plot with a nice sunny exposure, still annually consent to pay fifteen to twenty-five cents a quart for half ripe or over ripe berries? Do you realize that strawberries may be grown readily in any good sunny garden and that the twenty-five cents you pay for a box of extra early, extra bitter berries will actually buy twenty-five strawberry plants; and that these plants with their runners set out and well cared for will produce easily half a quart each next season? But that is not the whole story. You can grow better berries than you can buy, because the quality is never perfect unless the berries are ripened on the vines and fresh gathered.

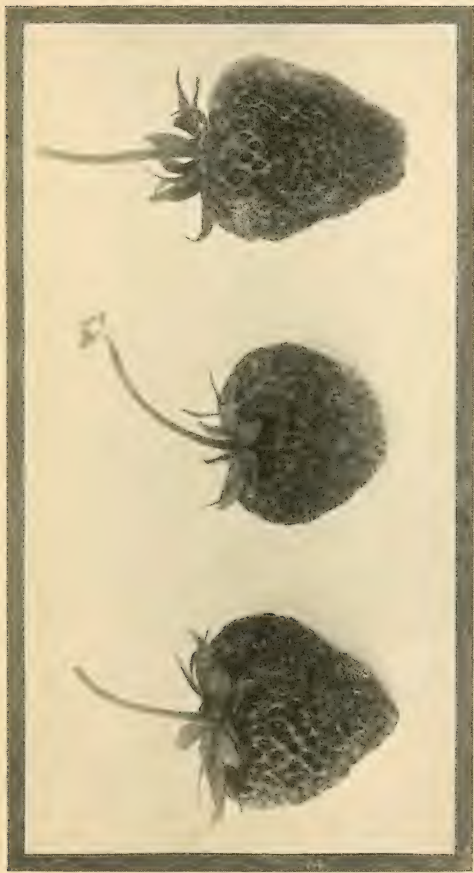
The two great deterrents to home strawberry growing are not any difficulties met in growing the plants; they are, first, lack of definite information on the subject, and,

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secondly, the necessity of waiting until the following season for a crop. It is so hard to make any of our own plans reach beyond the usual annual circle.

With the price of layer plants of the best varieties so low, it will hardly pay to get plants of some unknown sort from a neighbor's bed, but getting the plants near at hand has one advantage; they should be kept out of the soil but a few hours. However, if you have your bed ready, the plants from the seedsman or nurseryman will not suffer, because they will be (or should be) carefully packed to keep the roots moist. In either case be prepared to get the plants into the ground as soon as they come into your possession.

It has been said that strawberries can be grown in any soil. It is true, that at least some varieties will do well in almost every soil, but good rich sandy loam, with a southern exposure, protected on the north, is the best if early berries are desired. A northern exposure is more suitable for the late varieties. In either case, the situation should be open and airy. These are two requirements, deep soil and thorough draining, if the largest, finest



By a proper selection of varieties strawberries may be had over a long season. Do not fail to try one or two of the new fall bearing kinds

berries are wanted; both may be had at little expense for such a small area as will be required in the home garden.

In addition, the soil must be thoroughly prepared. This is even more important with strawberries than with most garden crops. Unless the ground is in excellent condition, cross plow and sub-soil plow should be used, and then thoroughly re-fined and harrowed.

Manure, too, is important. Old, fine, mixed yard manure will be the best thing to get, or a manure compost, well rotted up. If not enough manure can be got, supplement with chemical fertilizers—the best combination being ground bone, acid phosphate and muriate of potash in equal proportions and at the rate of five pounds per square rod. Whether manure or fertilizer is used, supplement with light dressings of nitrate of soda, (1) just after setting, (2) in August or September of each season's growth and (3) soon after the blossoms open in spring.

The young plants, or "runners," for new beds are usually set out in the spring—April or first part of May—and on the whole this is more satisfactory than au-

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tumn setting. For the pot-layered system described later, early autumn setting is necessary. The spring weather is more likely to be favorable to rapid new growth and the "layers" that have wintered over are all well hardened and ripened and in better shape to stand the disturbance incidental to transplanting. When setting out runners from one's own bed, so that the plants need be out of the soil only a short time, fall planting need not be disadvantageous if a favorable day and time can be chosen.

Before setting, the plants should be put in shape by removing all dead or broken and large leaves and trimming back the roots about one-half. This gives a nice stocky, studdy little plant that can be "set" nicely. If your plants have been shipped from a distance the roots may have been "puddled" or dipped in clay mud, to keep them moist. If so, rinse them off in water and trim before planting. The actual operation of setting the plant in the soil is one of the most important in the whole culture of the strawberry. It is best to do this work on a cloudy day or late in the afternoon. If only a few rows

are being set, they may of course easily be watered and shaded. The soil should be so well prepared that it will not be necessary to use a dibble, as the roots should be spread out. Do not cover the crown. Set the roots in as deep as is necessary to cover all the roots, but not deeper. Set them in firm—if the soil is dry press into place with the balls of the feet, placed either side of the newly set plants.

There are two types of layers: those rooted automatically in the soil of the bed, and pot-layers. These latter are not by sinking two or three inch pots into the soil and filling level and holding a rooting runner in place over each with a small stone, so that the roots will be confined within the pot. These, of course, stand transplanting more readily than the ordinary layers, especially in summer or autumn.

There are two ways of setting the plants suited to the home garden, where the best in quality as well as in yield should always be aimed at. The first is the hill system. The plants are set in rows about a foot apart. The rows may be single, or

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four or five together in a bed, the rows a foot apart, with a two foot alley between the beds. In this case all runners are pinched off as soon as they start and the ground hoed between the hills. Where only a few plants are grown and the soil is rich and may be watered, this method will probably give the best satisfaction. The second is the "matted row" system. The plants are set twelve inches apart in rows about three feet apart. As the runners start, they are rooted to a distance of six or eight inches on each side of the row and then turned along it. This gives a neat, narrow row, twelve to sixteen inches wide. These new plants are separated from the parent ones as soon as well established, and all other runners from both sets of plants kept pinched off.

There are also two systems of growing the berries as well as two of setting the plants; the annual, by which only one crop of berries is taken before the plants are discarded, and the biennial. The latter may be used with either the hill or the matted row system, but in either case the first crop will be the best if not the biggest, and the beds must be kept clean. For

the annual system, pot-layered plants and the hill system of growing are used and maximum quality and quantity of crop attained. This system is as follows: as soon as the plants are through fruiting or by setting aside for propagation purposes a few plants, not permitted to fruit, get new plants by the pot-layering method. As soon as possible after the middle of July, set these in the new bed, which must be rich and thoroughly prepared and give them clean, frequent cultivation until the fall. Pinch off all runners as fast as they appear. The idea is to make a strong quick growth and concentrate it all in the newly set crowns, thus assuring a full crop of the very best fruit for the following spring. The advantages of this system are, that there is a full crop every year, instead of only two in three years. After the old bed is plowed down for a late vegetable crop, there is time for an early one, lettuce, peas, beets, etc., before the new bed is set. It also means the very best quality and size of fruit.

Whatever methods of planting and growing are used, the beds must be kept clean and frequently cultivated. A wheel

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hoe and a small "onion" hoe for use between the plants are the handiest tools to use. For a month or two after setting the plants—work the ground rather deeply, but as the new roots begin to form and spread, restrict it to an inch or two in depth. It is particularly important to maintain the soil mulch in dry weather by frequent stirring of the soil.

The purpose of mulching the strawberry bed is fivefold. It gives winter protection; holds the plants from starting prematurely in the spring; keeps the berries clean; retains the soil moisture, and keeps the weeds down. So it pays to do it well. Salt or meadow hay is the ideal material to use, but if it cannot be had, other cheap hay, straw or even leaves will answer. Cover both beds and walls to a depth of two or three inches, before severe frosts. Hold in place, if necessary, with boards or plank. Leave on until growth starts in the spring and then pull aside from each plant to let the leaves and flower stalks up through. Keep as evenly and compactly about the plants as possible, to mulch the soil and to protect the fruit.

The strawberry is comparatively free

from serious injury by disease, "rust" or blighting of the leaves being the most troublesome. Where clean culture is given, and the beds kept down only one or two years at a time, it is most unlikely to prove troublesome. Sometimes also they are attacked by mildew. Both troubles are controlled by spraying with Bordeaux. Make first application soon after plants are set and three or four times before fall, and just before blossoming, following ten days later, in the spring.

Among the insect enemies, the White Grub (larva of the June bug) is the most troublesome. Dig out and destroy. Do not follow grass or sod directly with strawberries. The strawberry worm, a small green caterpillar, sometimes proves annoying, when in large quantities. Dust the foliage, while moist, with finely sifted ashes or with lime. If cut-worms cause any trouble, dig up and destroy and catch with sweetened bran mash sprayed with Paris Green.

CULTURE—GRAPES

THERE may be some excuse for your not growing your own fruit, if your space is limited, but you cannot use this excuse about grapes. The classical fig-tree may not be adapted to your particular climate but by all means have your own vine:—if there is not room for a trellis in the garden, train it against the wall of the house, woodshed or garage.

The grape is not particular as to soil, as long as it is well drained. I have seen them thriving on soil so gravelly that it would seem nothing could grow there. If it can be had, a soil rather of clay composition will be best. The exposure should be to the sun, and if possible an open, airy one. If the soil is not already in good condition, and well enriched, prepare it thoroughly in both these respects before you plant. Stable manure will be good to use, provided it is well rotted up, but a liberal dressing of wood ashes should be added to supply potash, as it is necessary



The most essential factors in growing good grapes are proper pruning and plenty of potash

to have the wood thoroughly ripen and harden by fall, for upon this depends the crop of the following year. If using chemicals, take equal parts of bone, acid phosphate and muriate of potash, with a light top dressing of nitrate of soda, early in the spring free of undesired sprouts as directed under pruning. Secondly, spray with Bordeaux mixture before every rain, if possible, from the time the vine leaves come out until about the middle of July. After that use ammoniacal copper carbonate. Take special pains to cover every part of the new growth upon which the fruit is borne.

Where only a few vines are grown, the bunches are often protected by covering with manila bags, put on when the grapes are well formed on the bunches. The top of the bag is slit down three or four inches on sides and ends—four cuts—at the top, slipped over the bunch, and the flaps formed by the cuts folded over the canes and pruned below the canes.

DWARF AND TRAINED FRUITS

SOME enthusiasts believe that the dwarf fruit-trees will eventually replace the standard form altogether. I believe this to be an altogether exaggerated view, but nevertheless under certain conditions they are very desirable, and certainly a great boon to the man with a small place.

The great advantage of dwarf trees is the fact that they can be grown where there would not be room for standard types. Standard trees, for instance, are set thirty-five to forty feet apart. Doucin stock apples can be set within fifteen to twenty feet of each other, and Paradise stock apples as close as ten or even eight feet. Not only can three to five small trees be set where one or two standards would occupy the same amount of room, but they can, if conditions require it, be trained to a trellis along the boundary of the grounds, so that their growth is almost en-

tirely lateral. It often happens, too, that while there might be enough ground room for a standard tree, the height would be objectionable. And here again, of course, the dwarf trees furnish a practical solution to the problem.

Another point in their favor which is of almost equal importance to the man who desires to grow his own fruit on a small scale, is the fact that these small trees are so easily cared for and so efficiently attended to in the matter of spraying, pruning, thinning the fruit, etc. With no power except his two arms, he can care for his dwarf trees quite as thoroughly as the commercial orchardist can tend his acres, with a power spray-pump and all the other requisite apparatus.

It must be remembered, however, that the dwarf fruits need exceptionally high culture. The ground must be kept in the best of condition and they must be thoroughly looked after, especially if they are to be trained to a trellis or a wall. If you are willing to undertake this extra work, you will be well rewarded for it; but unless you are, you had not better attempt to grow them.

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The fact is, that the dwarf fruit tree offers a solution and a very advantageous solution to those who would otherwise go without fruit of their own at all. Its stronghold will be the suburban garden and the grounds of the small place; there the amateur and the enthusiast will be glad to give them all the attention which they require, in return for apples, pears and peaches in variety and of the first quality, which they will begin to yield him, not only after several years of fruitless labor, but almost immediately.

Unless the trees are to be planted in a garden soil already rich, holes should be dug out to a considerable size and old, very thoroughly-rotted manure mixed through the soil before it is put back into them. If the trees are to be set in a row along a wall or a trellis, it will be better, instead of making individual holes, to prepare a trench or broad, deep furrow in the same way. Where the trees are to be grown against the wall two things must be avoided—although in Europe they do not have to pay attention to them because of the difference in climate. Do not plant them against the wall, but a foot or so

from it and trained on a trellis, for in our hot summer sunshine the wall surface becomes so heated that it might be injurious to the branches trained against it and also training the limbs a few inches away from the wall gives more opportunity for a free circulation of air and the proper application of sprays, etc., to all parts of the branches. If possible, don't train along a wall facing south, as in such a location the trees are pretty sure to start into bud prematurely in the spring and be injured by late frost. Where an exceptionally warm and sheltered location of this sort cannot be avoided it will necessary to counteract the effect by sufficient mulching. I have a friend who has done this successfully by giving a big mulching of leaves and corn stalks around the base of the trees after the ground has become thoroughly frozen in winter and by shading the trees themselves from the warm early spring sun by pine boughs woven into a temporary rough wire trellis. This mulch is removed in the spring to allow thorough cultivation, but again spread on toward the end of June to conserve the moisture during the hot dry, mid-summer weeks.

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The trees should be so planted and arranged, especially in a garden where the horse and cultivator are used, as to allow continuous cultivation in one direction. That is, they should fit in with the rows of asparagus, small fruits, strawberry beds, etc., of a more or less permanent character, in order to make their cultivation as convenient as possible.

The amount of space available and other local conditions will determine whether you want to grow the trees in their regular form or train them near a wall or upon a trellis. In the latter case, the growth is induced to take a lateral form, as far as possible. Even with dwarfs the results will depend very largely upon the thoroughness with which the pruning is done, especially in the early stages of growth. To induce the pyramidal form of growth, which is usually the best for dwarf trees, it is necessary to cut back the main shoots or "leaders" quite low down, thus inducing the more vigorous growth of the side branches, and leaving the tree with an open center. At the time of planting they should be shortened back about one-third in the usual way, and as soon as they be-

come established the centers should be cut back to a height of from ten to twenty inches. If vigorous growth is made, these side branches should be headed in, leaving four or five shoots on each. These will, of course, tend to an upright position in making their growth. The following spring these shoots should be cut back severely—one-half will not be too much if they have made a vigorous growth—and in case they should be too thick remove some of the side branches from which they sprout. This severe pruning should be continued for three or four years, and the shoots should be gone over annually, early in the summer. All branches that crowd or cross should be cut out, and all those that seem to be making too vigorous growth should be headed back in order that the tree may be kept symmetrical. For best results in the fruit there should be free access of air and sunlight to all parts of the tree. Each spring, the annual growth of the year before should be cut back a third or more, as may be required to keep the trees in shape as small as desired.

Where the trees are to be trained upon

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the trellis, a somewhat different system has to be used. In the first place they should be planted almost directly under it, that is, so that the main trunk will grow close to the wires and not several inches away. After planting, when growth starts, the main trunk should be cut off a few inches above the first wire and three buds allowed to develop. One of these is trained along the wire on either side of the trunk and the third encouraged to make an upright growth as far as the next wire, where the same process is used; that is, three buds are left here, two of which are trained in either direction on the second wire, and the third bud, which should preferably be on the opposite side of the trunk from one below it, up to the third wire, etc. The shoots which start from the lateral branches should be kept cut back to four or five inches, saving only one out of every two or three so they will not be too close together. Every spring, as soon as the buds are well started, all those which are not desired should be rubbed off before they make any considerable growth, as this is not only very much easier but also saves the



Abundance of space is not necessary in order to enjoy home grown fruit.
A number of sorts are adapted to lateral training like the dwarf pear illustrated above

strength of the tree for the growth which is retained.

As regards the general care of dwarf fruit trees, they are not very different from the standards except that in order to be at all successful they must be given excellent care in every way and that it is generally necessary to thin the fruits; an operation which as far as standard trees are concerned does produce better results, but which is not usually attempted on account of the difficulty of doing it thoroughly. With the dwarf trees, however, it is not only necessary, as they have the habit of setting two or three times the fruit which they have strength to develop—but they are much more easily thinned, as most of the fruit spurs may be reached from the ground or at the worst from a step-ladder. The thinning may be accomplished by removing part of the fruit spurs, or a half or more of the fruits themselves after they have set and made some growth, which will be before the first of August.

Not only should the soil be made rich before the trees are set out, but they will need yearly attention in the matter of fertilization thereafter. As with standard

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fruits, green manuring with clover or some leguminous crop, especially during the latter part of the season, will be beneficial, and the soil should not be allowed to lack in potash. When there does not seem to be a rapid healthy growth in the spring a light application of nitrate of soda will usually be found of great service. Above all things the spraying must not be neglected, and where it is so easily accomplished, there is absolutely no reason for doing so, especially with efficient ready prepared sprays of various sorts which are now to be had from many sources. Before using any of these, however, I would strongly advise the fruit grower to get the report of his experiment station upon spraying and sprays in order that he may see for himself from actual and carefully tried experiments what preparations are likely to give the best results. The percentages of efficiency obtained from the various preparations are sure to prove interesting and profitable.

GENERAL CARE—PRUNING AND SPRAYING

NO matter how good stock you get, nor how thoroughly you have the ground prepared and fertilized, you cannot expect to have satisfactory results unless you are willing to keep careful watch over your various undertakings in the way of small fruit growing. The work is neither very hard nor overwhelming, but a constant vigilance must be maintained. If, for instance, you are keeping your eyes open, and spot the first batch of currant worms as soon as they hatch out, it will be the work of ten or fifteen minutes, perhaps, to apply Paris Green or hellebore enough to put them eternally out of business. But if you plan to fix up your bushes in the spring, and then not go near them again until the fruit is ready to pick, you will find yourself to have been cultivating only a fine crop of disappointments.

Make yourself familiar enough with the

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several chapters on culture and the spraying table in this chapter, so that you will know when to expect the various diseases or insects which are likely to cause you trouble and be on the watch for them. When any sort of trouble *does* make its appearance, be ready to begin the fight against it at once; a few days' delay may be fatal. Whatever spraying materials you are likely to require should be kept on hand ready to use—arsenate of lead, Bordeaux-mixture, lime-sulphur solution, Paris Green and hellebore may be had in small amounts and in a form convenient to keep and use, and the equipment of the anti-insect armory need not be at all expensive. Along with the various sprays and poisons the equipment should include a modern compressed-air hand sprayer, which will cost from four to seven dollars according to the type and the attachments. But you will have use for it practically all the year around, not only for your small fruits but for the vegetable garden, the flower garden, the hen-house and so forth, and you should not attempt to get along without one. A machine made of brass throughout will cost a lit-

tle more, but will outlast three of the others, as some of the sprays are very corrosive when brought in contact with iron or tin. In using your sprays especially preventative ones, which have to be applied before the insects or diseases which are to be fought have actually put in an appearance, be sure to have the job done on time. Furthermore, be sure to do it thoroughly—every leaf, branch and portion of the stem should be entirely coated. If you cannot do this with one application, make two.

From the frequent mention which has been made of pruning in the preceding chapters, you have probably realized by this time that it constitutes a very important part of successful fruit culture.

The best time for pruning is usually in the autumn, or in the spring before new growth starts to any extent. Prune first of all to keep the plant, bush or tree in the shape or form required. Then any canes, limbs or branches which show signs of disease, such as black-rot or galls, or which have become broken or badly bruised, should be cut back to firm, sound wood; also any that cross or rub each other.

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Small and dwarf fruit trees, if grown in the open, should be developed into what is termed the "vase" or open-headed form, by cutting back the main "leader" when planting, and later the more central branches, so as to keep them low, and induce lateral growth as much as possible.

All cuts should be made clean and smooth, and close up to the trunk or limb from which the branch is being severed. When a limb of any size (two inches or more in diameter) is removed the wound should be painted over with coal-tar or a heavy lead paint.

Aim always to keep the small fruits in good condition, well cultivated, well fed, and they will reward you generously with an abundance of such berries and fruit as you would not be without for many times the number of hours and dollars you will find it necessary to spend on them.

SPRAYING TREES

ABBREVIATIONS—AL—Arsenate of lead; PG—Paris green; H—Hellebore; Nic.—Nicotene preparations; MO—Miscible oil; KE—Kerosene emulsion; W—Water, hot (for dipping); BM—Bordeaux mixture; LS—Lime sulphur; AC—Ammoniacal solution copper carbonate; SF—Sulphur, flowers of (for dusting).
a—After; b—Before; d—Days; f—Follow up in; B—Blossoms; O—Open; F—Fall.

INSECT OR DISEASE.	ATTACKING.	REMEDIES.	REMARKS.
Apple-scab	Apple, pear	BM; LS (summer)	Three times; b B O; a B F; f 14 d.
Blister-mite	Apple, pear	LS; MO; KE; strong	Spray thoroughly in late fall or early spring.
Bud-moth	Apple	AL	Twice; when leaves appear; b B O.
Caterpillar, tent...	Apple	AL	Burn nests before caterpillars begin to spread.
Canker-worm	Apple	AL	Same as for Codlin-moth.
Codlin-moth	Apple	AL	In addition to spray use burlap bands on trunk for trap during July.
Curculio	Cherry, peach, plum	AL, strong	Spraying not very effective; jar trees every cool morning and catch beetles on sheet; spread beneath for several weeks after B F.
Curran-worm	Curran, gooseberry	AL; PG; H	At first appearance, usually before blossoming, spray at once. If a second brood appears after fruit forms, use hellebore.

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INSECT OR DISEASE.	ATTACKING.	REMEDIES.	REMARKS.
Leaf-hopper	Grape	KE	Be careful to cover under side of foliage. Spray during winter or early spring, covering every part of trunk and branches. KE, medium strength, applied in May or June, when young scale which appear like small, whitish lice, hatch out. BM until middle of July; after that, AC. For one or two vines cover each bunch when half grown with manila "store" bag.
Scale, San Jose	All fruit trees	LS; MO; KE; strong	
Scale, Oyster-shell . . .	Apple and other fruit trees	KE; medium	
Black Rot	Grape	BM; AC	
Fruit Rot	Plum, peach, cherry	LS (summer); BM	Keep fruit thinned so it will not touch. Gather cherries before quite ripe and spread out in a cool, airy place.
Leaf Blight or Curl	Plum, peach, cherry	LS (summer); BM	In using LS, be sure not to get it too strong.
Mildew	Gooseberry, especially foreign sorts	Potassium sulphide	Keep plants pruned to open form to allow free circulation of air.
Rust	Strawberries	BM	Keep plants sprayed during first season and until a B second season.

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